

REMARKS

Claims 1-15 and 17-23 are pending in the present application. By this reply, claim 16 has been canceled. Claim 1, 3, 7, 8 and 10 are independent claims.

CLAIM OBJECTION

Claims 8 and 15 have been objected to because of certain minor informalities. To overcome this objection, claims 8 and 15 have been amended in accordance with the Examiner's suggestions. Reconsideration and withdrawal of the objection is respectfully requested.

35 U.S.C. § 103(a) REJECTION

Claim 1 has been rejected under 35 U.S.C § 103(a) as being unpatentable over *Hall* (U.S. Patent No. 5,841,494) in view of *Kuo* (U.S. Patent No. 6,144,430). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

Claim 1 has been amended to incorporate therein claim 16 which has been rejected under 35 U.S.C. § 103 in combination with *Hall*, *Kuo*, *Abileah et al.* (U.S. Patent No. 5,629,784), *Davis et al.* (U.S. Patent No. 5,822,029) and *Kaneko* (U.S. Patent No. 6,295,108) as set forth on page 7 of the final Office

Action. Thus, the rejection of claim 1 will be addressed in view of this combination of references.

As shown in Fig. 6, *Hall* is directed to an LCD including a back light 11, a polarizer 17, and an LCD assembly composed of upper and lower plates and liquid crystal layer (3, 4, 5, and 13). The Examiner correctly acknowledges that *Hall* does not teach or suggest the hologram diffuser and the linear polarizing transformer recited in claim 1. To overcome these deficiencies, the Examiner further relies on *Kuo*.

Kuo as shown in Fig. 1 is directed to an LCD having an upper substrate 106 and a lower substrate 105. *Kuo* discloses a diffuser 103 disposed above the upper substrate 106. In contrast, claim 1 requires, *inter alia*, a hologram diffuser positioned below the upper substrate.

Abileah et al. does not overcome these deficiencies in the combination of *Hall* and *Kuo*, since *Abileah et al.* as shown in Fig. 2 discloses a diffuser 21 disposed above the upper substrate 13 of the liquid crystal display. At paragraph 8 of the final Office Action, the Examiner misinterprets an antireflective film or coating 35 as an upper substrate. *Abileah et al.* teaches that its diffuser 21 is disposed above the upper substrate 13 of the liquid crystal display and not below the upper substrate 13.

Neither *Davis et al.* nor *Kaneko* provides this missing feature in the combination of *Hall*, *Kuo* and *Abileah et al.* since *Davis et al.* and *Kaneko* are

not concerned with the use of a diffuser and the Examiner does not rely on these references for such a teaching.

Therefore, even if the references are combinable, assuming *arguendo*, claim 1 is patentable over the applied references, and reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

Claims 3-6, 8, 19, 20 and 23 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tedesco* (U.S. Patent No. 5,418,631) in view of *Davis et al.* and *Abileah et al.* This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

Regarding independent claim 3, the Examiner alleges that *Tedesco* discloses a $\lambda/4$ film recited in claim 3 by equating *Tedesco*'s quarter-wave plate 122 to Applicants' claimed $\lambda/4$ film. However, in Applicants' claimed invention, the $\lambda/4$ film is to transform the light from the CLC color filter layer, where the CLC color filter layer is formed on the lower substrate. That is, Applicants' $\lambda/4$ film is disposed above the lower substrate and not below the lower substrate (20) as taught in *Tedesco*.

Neither *Davis et al.* nor *Abileah et al.* corrects this deficiency of *Tedesco* since these references are not concerned with the use of a $\lambda/4$ film as in Applicants' claimed invention.

Therefore, even if the references are combinable, assuming *arguendo*, the combination of references would still fail to teach or suggest, *inter alia*:

a lower substrate on which a CLC color filter layer is formed . . . ;

a $\lambda/4$ film to transform the circularly polarized light from the CLC color filter layer into linearly-polarized light

as required by independent claim 3.

Regarding independent claim 8, *Tedesco* as acknowledged by the Examiner does not disclose the use of a hologram diffuser. To overcome this deficiency, the Examiner relies on *Abileah et al.*'s diffuser 21 as shown in Fig. 2. But, *Abileah et al.*'s diffuser 21 is disposed above the upper substrate 13 of the liquid crystal display and not below as required by claim 8. Further, *Davis et al.* does not overcome this deficiency since it is not concerned with the use of a hologram diffuser.

Therefore, even if the references are combinable, assuming *arguendo*, the combination of references as applied by the Examiner would still fail to teach or suggest, *inter alia*:

a hologram diffuser over the liquid crystal layer; . . . an upper substrate over the hologram diffuser

as recited in independent claim 8.

Accordingly, independent claims 3 and 8 and their dependent claims (due to their dependency) are patentable over the applied references. Reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

Claims 7 and 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tedesco* in view of *Abileah et al.* This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

As correctly acknowledged by the Examiner, *Tedesco* does not disclose a hologram diffuser as recited in independent claim 7. To overcome this deficiency, the Examiner further relies on *Abileah et al.* However, *Abileah et al.*'s diffuser 21 is disposed above the upper substrate 13 of the liquid crystal display as shown in Fig. 2. In contrast, Applicants' invention requires an upper substrate over the hologram diffuser as recited in independent claim 7.

Therefore, even if the references are combinable, assuming *arguendo*, claim 7 and its dependent claims (due to their dependency) are patentable over the applied references, and reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

Claims 10-18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Hall* in view of *Kuo* as applied to claim 1¹ above and further in view of *Abileah et al.*, *David et al.* and *Kaneko*. This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

Regarding independent claim 10, the Examiner correctly acknowledges that *Hall* does not disclose the use of a hologram diffuser as claimed. The Examiner thus relies on *Abileah et al.* to teach this missing feature. However, as discussed above, *Abileah et al.*'s diffuser 21 is disposed above the upper

substrate 13 of the liquid crystal display as shown in Fig. 2 and other figures. In contrast, Applicants' claimed invention requires, *inter alia*, a hologram diffuser disposed below the upper substrate, as recited in independent claim 10. The other references, relied on by the Examiner, also do not teach or suggest this missing feature as recited in claim 10.

Thus, even if references are combinable, assuming *arguendo*, the combination of references would not teach or suggest the invention as recited in claim 10. Accordingly, claim 10 and its dependent claims (due to their dependency) are patentable over the applied references, and reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

Claim 2 has been rejected under 35 U.S.C. § 103 as being unpatentable over *Hall* in view of *Kuo* as applied to claim 1 above and further in view of *Kaneko* (U.S. Patent No. 6,295,108). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

As discussed above, the combination of *Hall* and *Kuo* does not teach or suggest, *inter alia*, a hologram diffuser positioned below the upper substrate as recited in independent claim 1 from which claim 2 depends. *Kaneko* does not overcome this deficiency since *Kaneko* also discloses as shown in Fig. 14 a diffusing sheet 15 disposed above the upper substrate 2 of the LCD.

¹ Claims 10-15 do not depend from independent claim 1.

Thus, even if the references are combinable, assuming *arguendo*, claim 1 and its dependent claim 2 (due to its dependency), are patentable over the applied references. Reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

Claim 21 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tadesco* in view of *Abileah et al.* as applied to claims 7 and 22 above and further in view of *Davis et al.* This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

As discussed above, the combination of *Tadesco* and *Abileah et al.* does not teach or suggest, *inter alia*, an upper substrate over the hologram diffuser as recited in independent claim 7 from which claim 21 depends. *Davis et al.* does not overcome this deficiency since *Davis et al.* is not concerned with the use of a diffuser and is relied on for the use of a color filter.

Therefore, even if the references are combinable, assuming *arguendo*, claim 7 and its dependent claim 21 (due to its dependency), are patentable over the applied references and reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

Claim 9 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tadesco* in view of *Davis et al.* and *Abileah et al.* as applied to claims 3-6, 8, 19, 20 and 23 above, and further in view of *Kondo et al.* (U.S. Patent No. 6,198,520). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

As discussed above, the combination of *Tadesco*, *Davis et al.* and *Abileah et al.* does not teach or suggest, *inter alia*, an upper substrate over the hologram diffuser as recited in independent claim 8 from which claim 9 depends. *Kondo et al.* does not overcome this deficiency since it is not concerned with the use of a diffuser as claimed and the Examiner relied on *Kondo et al.* for allegedly teaching a CLC color filter.

Thus, even if the references are combinable, assuming *arguendo*, independent claim 8 and its dependent claim 9 (due to its dependency) are patentable over the applied references. Reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

CONCLUSION

For the foregoing reasons and in view of the above clarifying amendments, Applicants respectfully request the Examiner to reconsider and withdraw all of the objections and rejections of record, and earnestly solicit an early issuance of a Notice of Allowance.

The Examiner is respectfully requested to enter this Amendment After Final Rejection, in that it raises no new issues but merely places the claims in a form more clearly patentable over the references of record. In the alternative, the Examiner is respectfully requested to enter this Amendment After Final Rejection in that it reduces the issues for appeal.

Should there be any outstanding matters which need to be resolved in the present application, the Examiner is respectfully requested to contact Esther H. Chong (Registration No. 40,953) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and further replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Enclosures: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

The claims have been amended as follows:

1. (Twice Amended) A liquid crystal display usable with a back light source supplying light, comprising:

a cholesteric liquid crystal (CLC) polarizer to transmit one of left-circularly polarized light and right-circularly polarized light from the back light source, and to reflect other light not transmitted;

a lower substrate on which a CLC color filter layer is formed wherein the CLC color filter layer transmits the circularly polarized light from the CLC polarizer having certain wavelengths and reflects other light not transmitted;

a liquid crystal layer to selectively revolve a polarized direction of the circularly polarized light from the CLC color filter layer;

an upper substrate over the liquid crystal layer and having a hologram diffuser wherein the hologram diffuser diffuses the revolved circularly polarized light from the liquid crystal layer; and

a linear polarizing transformer to transform the diffused circularly polarized light from the hologram diffuser into linearly polarized light,

wherein the hologram diffuser is positioned below the upper substrate.

7. (Twice Amended) A liquid crystal display usable with a back light source supplying light, comprising:

a cholesteric liquid crystal (CLC) polarizer to transmit one of left-circularly polarized light and right-circularly polarized light from the back light source, and to reflect other light not transmitted;

a $\lambda/4$ film to transform the circularly polarized light from the CLC polarizer into linearly-polarized light;

a linear polarizer above the $\lambda/4$ film;

a lower substrate above the linear polarizer;

a liquid crystal layer above the lower substrate;

a hologram diffuser over the liquid crystal layer; and

an upper substrate over the [liquid crystal layer and having a] hologram diffuser, wherein the hologram diffuser diffuses the linearly-polarized light from the liquid crystal layer.

8. (Twice Amended) A liquid crystal display usable with a back light source supplying light, comprising:

a collimating member to collimate the light supplied by the back light source;

a cholesteric liquid crystal (CLC) polarizer to transmit one of left-circularly polarized light and right-circularly polarized light from the collimating member, and to reflect other light not transmitted;

a lower substrate on which a CLC color filter layer is disposed wherein the CLC color filter layer [polarizer] transmits light from the CLC polarizer having certain wavelengths and reflects other light not transmitted;

a liquid crystal layer;

a hologram diffuser over the liquid crystal layer;

a planarization layer to planarize the hologram diffuser;

an upper substrate over the [liquid crystal layer and having a] hologram diffuser, [and a planarization layer to planarize the hologram diffuser] wherein the hologram diffuser diffuses light from the liquid crystal layer; and

a linear polarizing transformer polarizing the diffused light into linearly-polarized light.

10. (Twice Amended) A liquid crystal display, comprising:

a back light unit to produce and supply light;

a collimating member to collimate the light supplied by the back light unit;

a cholesteric liquid crystal (CLC) polarizer to transmit circularly polarized light of a predetermined direction from the collimating member, and to reflect other light not circularly polarized in the predetermined direction;

a lower substrate above the CLC polarizer;

an upper substrate above the lower substrate; [and including]

a holographic diffuser disposed below the upper substrate [thereon and] wherein the hologram diffuser diffuses light without altering a polarization of the light;

a liquid crystal layer disposed between the lower substrate and the upper substrate;

a color filter layer to transmit only predetermined wavelengths of light disposed between the lower substrate and the upper substrate; and

an upper linear polarizer above the upper substrate and polarizing the diffused light from the holographic diffuser.

15. (Twice Amended) The liquid crystal display according to claim 13 [10], further comprising:

a compensating film disposed between the $\lambda/4$ film and the upper linear polarizer to transform light into linearly-polarized light.